

# FROM TREE TO TRACK

THE CROSSTIE PRODUCTION PROCESS

Crosstie production is a complex and time-consuming process. Though they are the backbone of our railroads, crossties and the extraordinary performance they deliver are often taken for granted. Inside is a detailed explanation of just what all goes into producing one of the most enduring products in the railroad industry -- the treated wood crosstie.





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35-45 years average growing time.

*Dependent upon species, growing conditions, geographic location.  
The vast majority of logged forests are 2nd or 3rd growth timber.*



## RAW MATERIAL PHASE



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then Replanting/Regeneration.

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Current regrowth of timber exceeds the rate of harvest by as much as 300%.*



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To sawmill or to logger or sawmill off-site  
yard inventory depending on conditions.



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Logs sorted by species and grade  
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## **INVENTORY PHASE I**

As logs at the sawmill up to 4 months.

# **RAW MATERIAL PHASE**





## PROCESSING PHASE I

Logs sawn into rough products.

*Tie logs can be sawn into a variety of end products that may or may not yield a tie depending on market product pricing.*



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## INSPECTION PHASE II

*This is where the sawyer determines what products to cut from log.*

### **Other Log Products**

*Pallet lumber, grade lumber of varying thicknesses that yields flooring, furniture blocks/lumber, cabinet lumber, moulding/millwork stock.*

### **Center of Log Products**

*Ties, pallet cants, lumber, industrial timbers.*



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## INSPECTION PHASE III

*This is where an inspector determines where the rough product stands in the grade. This is where the first opportunity for degrade or fall-down occurs after sawing.*

**GRADE TIES** - 7x9, 7x8, 6x8, of either 8½ or 9 feet in length.

**INDUSTRIAL TIES** not meeting grade, but serviceable.

**LANDSCAPE TIES** not serviceable ties (cull).

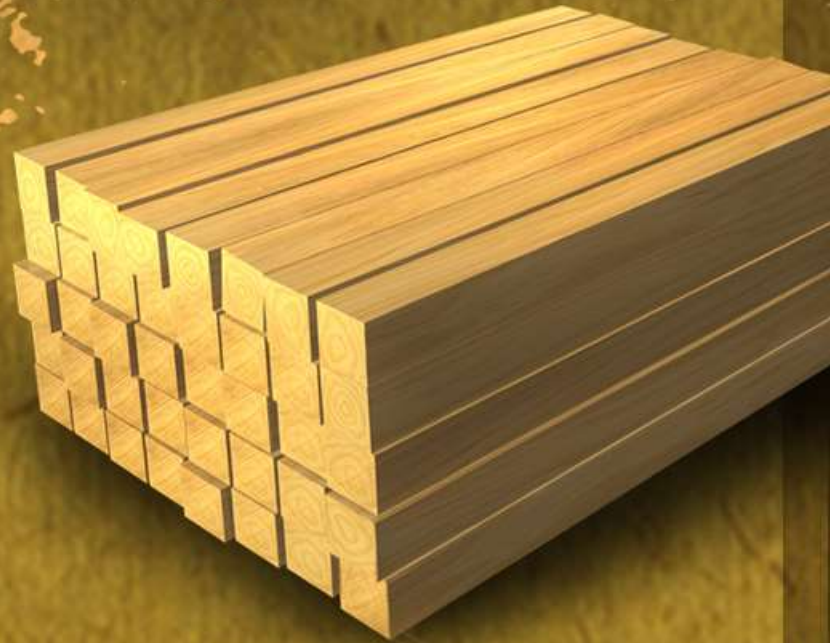
## RAW MATERIAL PHASE





## **INVENTORY PHASE II**

Material can remain in inventory for several weeks.



## **UNTREATED TIE PHASE**



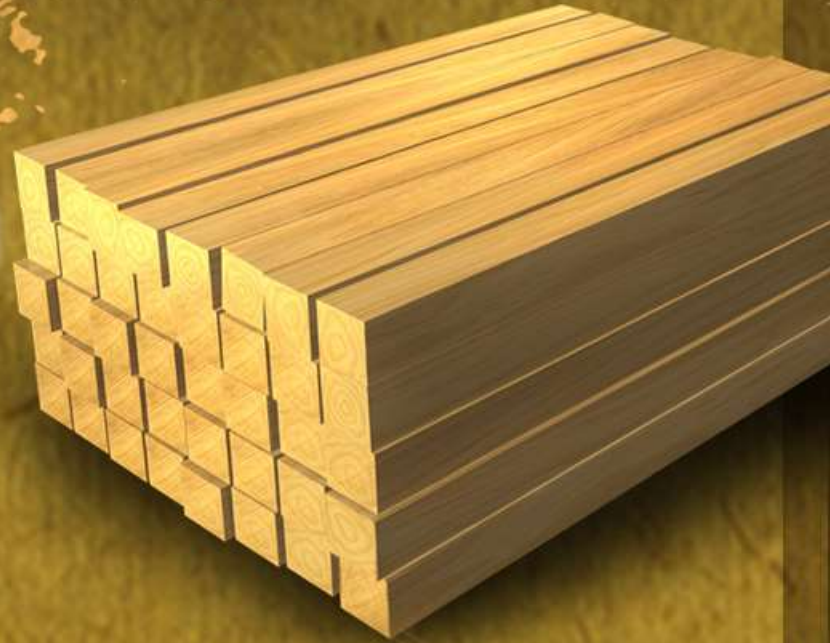
## **INVENTORY PHASE II**

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## **TRANSPORTATION PHASE II**

*Directly to treating plant. OR To concentration yard.*

*Railroad or independent contractor owned for days to months depending on the services being provided at the yard---stacking, drying, etc.*



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## INSPECTION PHASE IV

Inspection prior to payment for untreated ties.

*Degrade or fall-down can occur at this point as well.*



*If ties are held by an independent contractor for partial processing, such as sorting by grade, end plating or trimming, this would occur prior to Transportation Phase II to treating plant and inspection phase IV at treating plant.*

*Transportation Phase II to Treating Plant also Inspection Phase IV when ties arrive at treating plant.*

# UNTREATED TIE PHASE



## **PROCESSING PHASE II**

*Begins with precision double-end-trimming, incising, end-plating, boring for pre-plating kerfing and branding of ties.*

**UNTREATED TIE PHASE**



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## **PROCESSING PHASE II**

*Begins with precision double-end-trimming, incising, end-plating, boring  
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### **Stack for air drying**

**Mixed hardwood species 4-8 months**  
**Oaks 8-12 months**

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## **PROCESSING PHASE III - INSPECTION PHASE V**

Air dried ties are inspected and packaged for treatment.

## **UNTREATED TIE PHASE**



## PROCESSING PHASE II

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### Pre-Treatment

*(if specified)*

**Borate Diffusion**

**Requires 2-6 weeks  
in storage**

### Stack for air drying

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*If pretreatment is specified, ties must  
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### Package for Boultonizing\*

**Up to 1 month**

\* Boultonizing is an in-cylinder rapid drying / treatment process that allows that allows green ties to be creosote treated without air drying storage time.

*In some circumstances ties that have been stacked for air-dry for as much as 2 months will be Boultonized.*

## PROCESSING PHASE III - INSPECTION PHASE V

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# UNTREATED TIE PHASE



## **PROCESSING PHASE IV**

### **PRESERVATIVE (Creosote) PRESSURE TREATING OCCURS**

8-hour to 36-hour cycles depending on which treating process is employed and the capabilities of the treating plant. The treating specifications of American Wood-Preservers' Association (AWPA) and American Railway Engineering and Maintenance -of-Way Association (AREMA), or customer / end user will be followed.

*Preservative delivery to treating plant must occur in timely scheduled manner for this processing phase to occur efficiently.*



## **TREATED TIE PHASE**



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1-4 hours typical to keep drippage within the closed treating process.



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## **INSPECTION PHASE VI**

Quality Control, Preservative Retention and Penetration.

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## **INSPECTION PHASE VII**

Customer and/or plant personnel provide one additional inspection prior to transportation.

## **TREATED TIE PHASE**





## **INVENTORY PHASE III**

*Up to 12 months- customer driven. Note: If held for more than one month, an additional inspection is required prior to shipment.*

**or**

## **TRANSPORTATION PHASE III**

By either rail or truck to installation site.

*During this transportation phase there may be an additional inventory phase either in cars or holding yards depending upon installation requirements.*



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## **SITE DELIVERY AND UNLOADING**

To Class 1 railroads, short line railroads, regional railroads, contractors, industrial and/or government customers.

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By mechanized tie gangs or mechanized installation crew.

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## **IN TRACK SERVICE FOR 30-35 YEARS AVERAGE**

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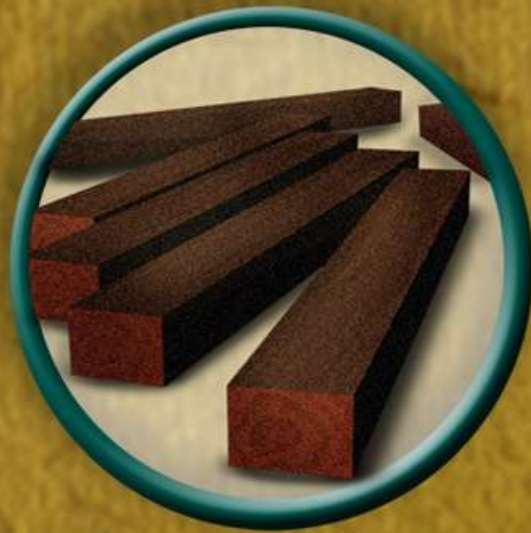


## **REUSE-OR-RECYCLE-OR-DISPOSAL PHASE**

When a crosstie reaches the end of service in Class 1 rail line, its usefulness can be extended as a relay tie in short line or regional railroads, as a landscape or fence timber, as fuel in a co-generation or bio-mass fuel recovery operation, or as material to be reconstituted into another product. Ultimately, all ties are properly disposed of.

## **USED TIE PHASE**

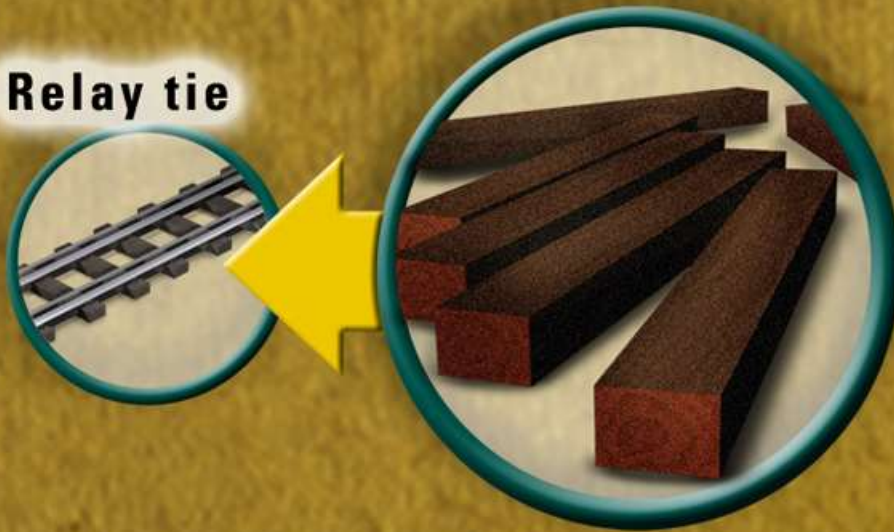




**USED TIE PHASE**



**Relay tie**



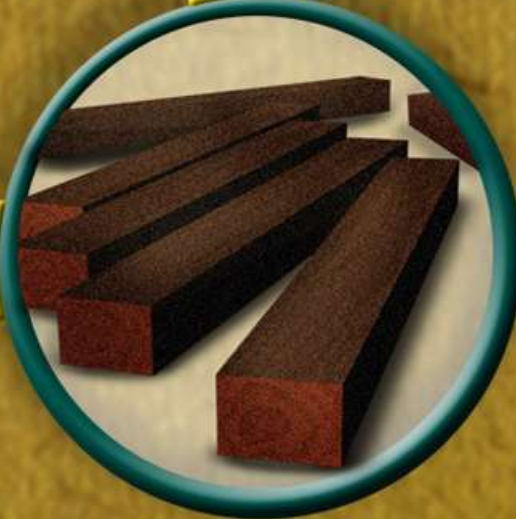
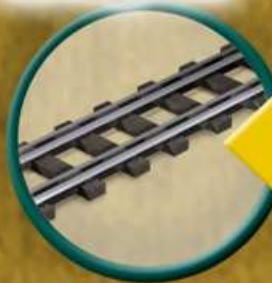
**USED TIE PHASE**



**Landscape tie or fence post**



**Relay tie**



**USED TIE PHASE**



## Landscape tie or fence post



# USED TIE PHASE



**Landscape tie or fence post**



**USED TIE PHASE**



**Landscape tie or fence post**



**USED TIE PHASE**



**Landscape tie or fence post**



**USED TIE PHASE**





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